

June 19, 1923.

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F. C. STIMMEL

BAFFLE WALL FOR HORIZONTAL WATER TUBE BOILERS

Filed April 5, 1922

2 Sheets-Sheet 1

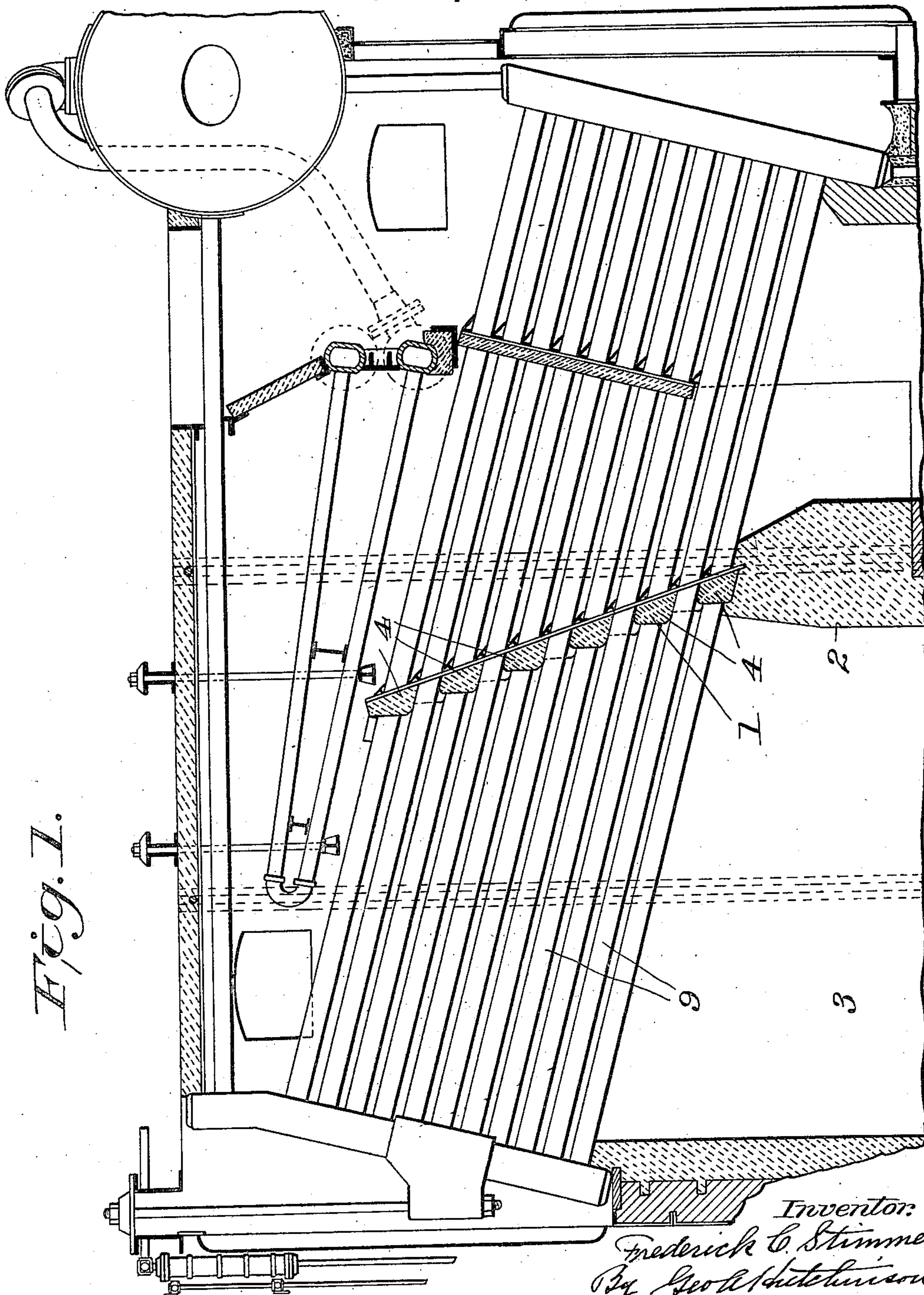


Fig. 1.

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Fig. 3.

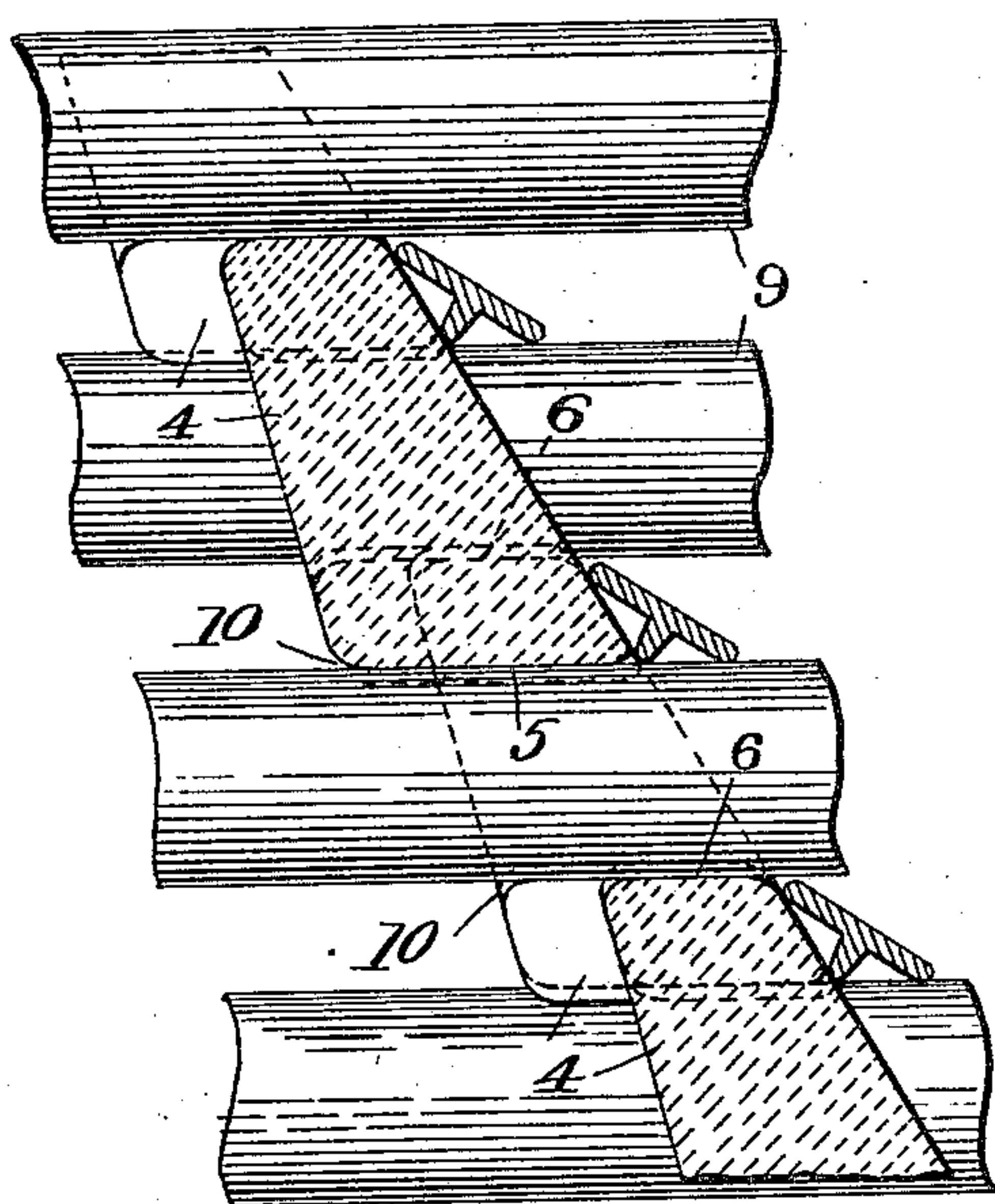


Fig. 2.

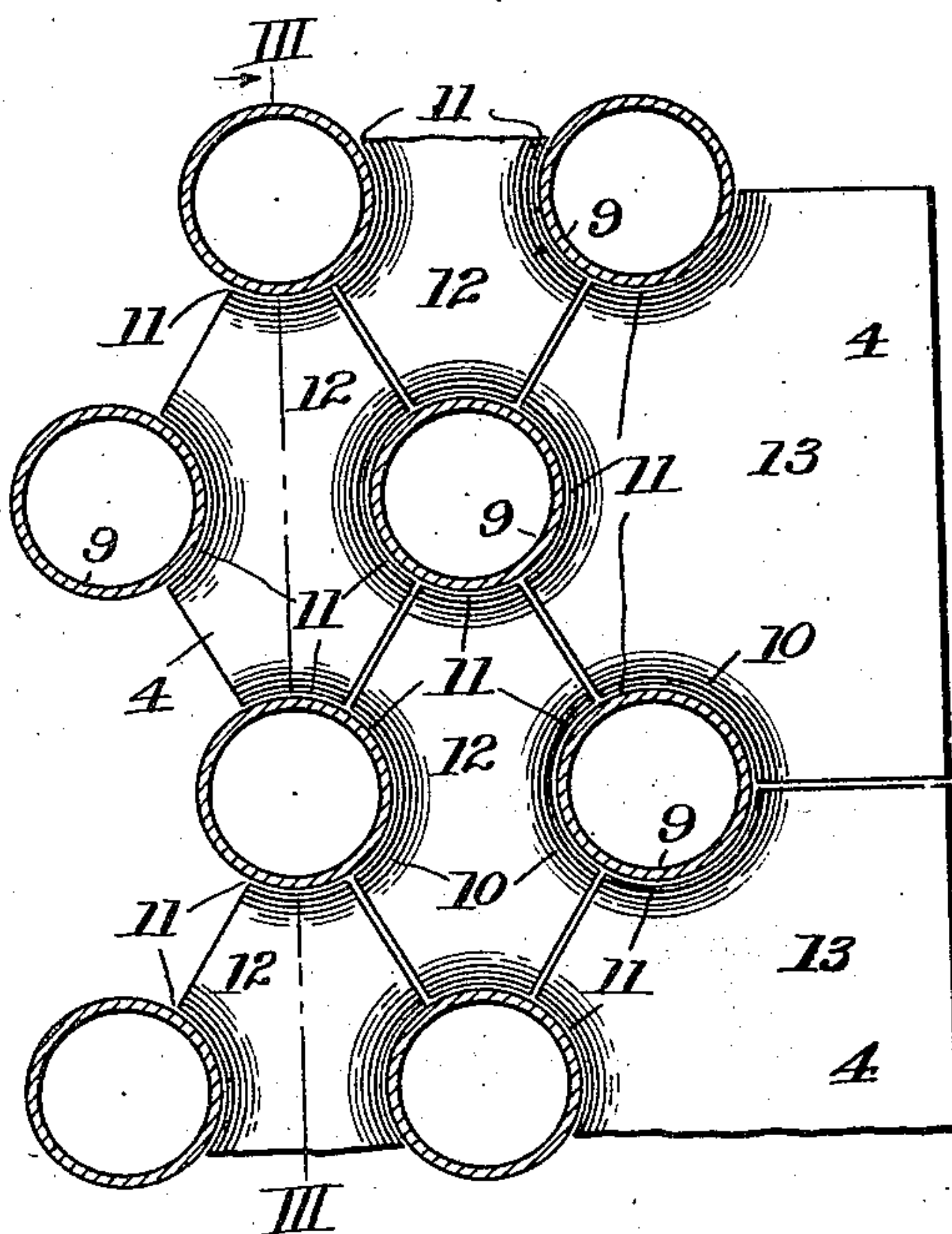
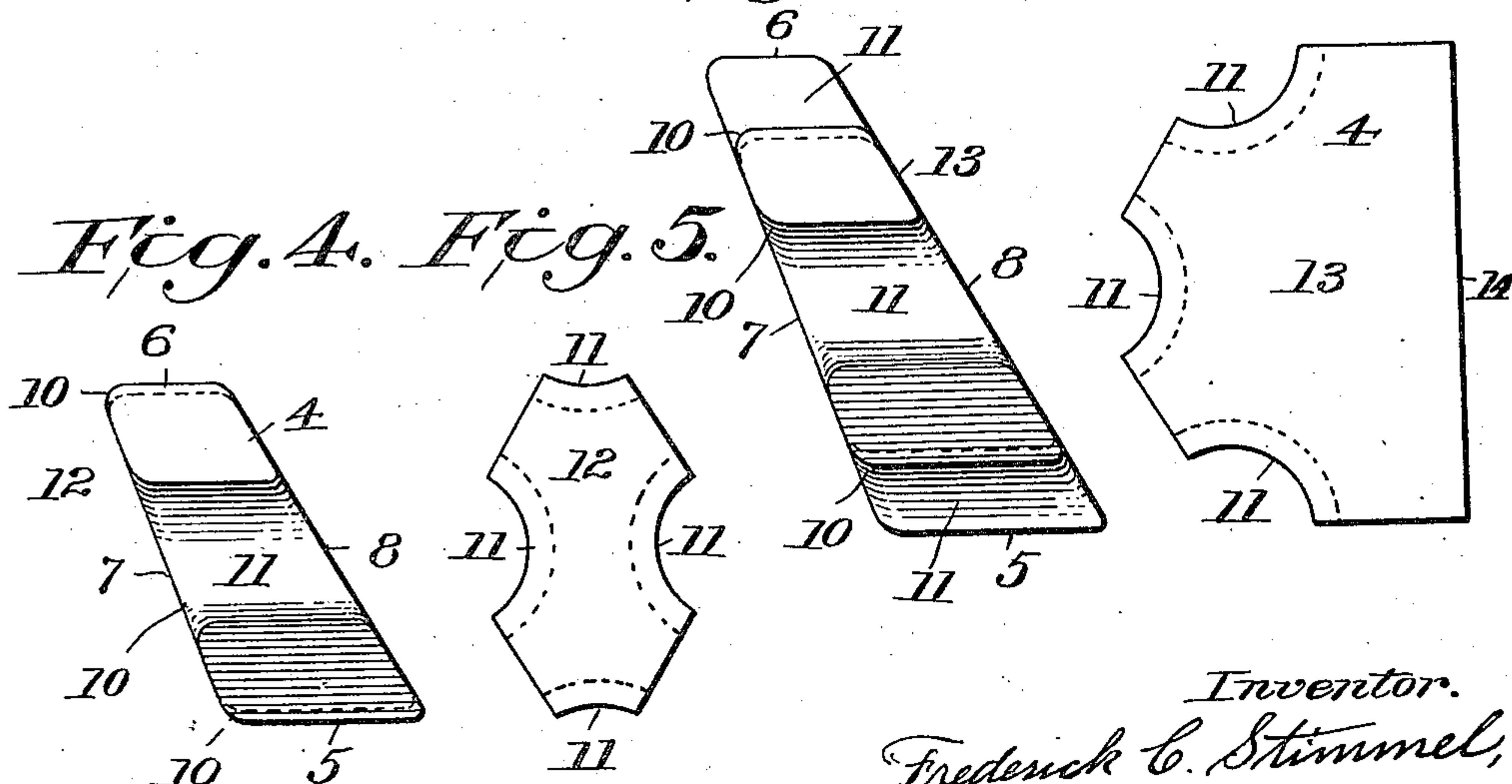


Fig. 6.

Fig. 7.

Fig. 4. Fig. 5.



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# UNITED STATES PATENT OFFICE.

FREDERICK C. STIMMEL, OF CHATTANOOGA, TENNESSEE, ASSIGNOR TO THE CASEY-HEDGES CO., A CORPORATION OF OHIO.

## BAFFLE WALL FOR HORIZONTAL WATER-TUBE BOILERS.

Application filed April 5, 1922. Serial No. 549,914.

*To all whom it may concern:*

Be it known that I, FREDERICK C. STIMMEL, a citizen of the United States, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented certain new and useful Improvements in Baffle Walls for Horizontal Water-Tube Boilers, of which the following is a full, clear, and exact specification.

This invention relates to baffle tile for steam boilers, and has for its object to provide tiles of improved construction for building up inclined baffles in horizontal water tube boilers, whereby the present tendency of such tiles to fall over is averted and the tiles made self-supporting. Another object is to form the tiles in such a way that the tubes which they surround may be renewed without removing said tiles or taking down the baffle walls constructed thereof. Other objects will appear as the description proceeds.

The invention will be first hereinafter described in connection with the accompanying drawings, which constitute part of this specification, and then more specifically defined in the claims at the end of the description.

In the accompanying drawings, wherein similar reference characters are used to designate corresponding parts throughout the several views:—

Figure 1 is a longitudinal vertical section of a horizontal water tube boiler equipped with an inclined baffle wall constructed of tiles formed in accordance with this invention.

Figure 2 is a detailed view of a few of said tubes with the tiles shown on a larger scale, the tubes being in cross section and the tiles in elevation looking from the fire side of the baffle wall.

Figure 3 is a detailed section on the line III—III of Figure 2.

Figures 4 and 5 are detailed side and front elevations of one of the diamond-shaped inner tiles of the baffle wall, and

Figures 6 and 7 are similar views of one of the outer or edging tiles of the wall.

Experience with horizontal water tube boilers has shown that better results are obtained when the baffle wall 1, Figure 1, mounted on the fire wall 2, is built on an incline extending upwardly and forwardly as shown in order to gradually restrict the

space through which the gases rise from the firebox 3. Such inclined baffle walls have heretofore been constructed of flat tiles of uniform thickness from top to bottom, and it has been found that such tiles are apt to fall over when arranged on an incline, making it difficult to build these walls and maintain them when built. To overcome this difficulty the present tiles 4, of which the inclined baffle wall 1 is constructed, are formed with their bases 5 thicker than their top edges 6 and with upwardly converging front and rear faces 7 and 8, respectively, so that the centers of gravity of said tiles will fall within the same and they will, consequently, be self-supporting and not apt to fall over like the flat tiles heretofore used. Another advantage in the present form of the tiles is that the broad bases thereof, being arranged nearer the fire, will increase the durability of the baffle wall, the added thickness being at the points on the tiles subjected to the greatest heat.

In order to permit the water tubes 9 to be renewed without taking down the baffle wall 1, as has been the practice up to the present time, the front faces 7 of the tiles 4 are made with bell-shaped mouths 10 leading to the grooves 11 which fit around said tubes. This construction permits new tubes to be readily guided into said grooves when renewals are necessary, the old tubes of course being withdrawn and the new ones inserted endwise or axially.

As illustrated in Figure 2, the tiles 4 of which the baffle wall 1 is constructed may include inner diamond-shaped tiles 12 having grooves 11 at the top, bottom and opposite sides to fit around four adjacent tubes 9 and the tiles 12 themselves interfitting with one another to form the continuous baffle wall shown. The tiles 13 constituting the edges of the baffle wall are formed as shown in Figures 2 and 7 with outer straight edges 14 and three grooves 11 to fit around adjacent tubes 9 as will be readily understood by boiler manufacturers. It will be understood, however, that the tiles may be formed in other shapes without departing from this invention so long as they are made thicker at their bases or have the bell-shaped mouths leading to the tube-embracing grooves.

I claim:

1. A baffle wall, for horizontal water tube



boilers, arranged transversely of the tubes and inclined forwardly for the purpose specified, said wall being composed of inter-fitting tiles each having its front and rear  
5 faces inclined in a forward and upward direction but at different angles, and the base of each tile being thicker than its upper edge.

2. A baffle wall, for horizontal water tube  
10 boilers, arranged transversely of the tubes and inclined forwardly for the purpose specified, said wall being composed of inter-fitting tiles each having its front and rear faces converging upwardly, and the center  
15 of gravity of each tile falling within its base.

3. A baffle wall, for horizontal water tube  
20 boilers, arranged transversely of the tubes and inclined forwardly for the purpose specified, said wall being composed of inter-fitting tiles each having its front and rear faces converging upwardly, and the faces of the tiles on one side of the wall being flush  
25 with one another.

4. A baffle wall, for horizontal water tube  
30 boilers, arranged transversely of the tubes and inclined forwardly for the purpose specified, said wall being composed of inter-fitting tiles each having its front and rear faces inclined in a forward and upward direction but at different angles, the base of each tile being thicker than its upper edge  
35 and the center of gravity of each tile falling within its base.

5. An inclined baffle tile having its base  
40 of greater thickness than its upper edge, and grooves in its edges to fit around the tubes of a boiler, the ends of said grooves on one face of the tile being bell-shaped for the purpose specified.

6. A diamond-shaped baffle tile having its  
45 base of greater thickness than its upper edge, and grooves in said base, upper edge and lateral edges of said tile to fit around the tubes of a boiler, the ends of said grooves on one face of the tile being bell-shaped for the purpose specified.

7. A diamond-shaped baffle tile having its

base of greater thickness than its upper edge, and its front and rear faces converging upwardly, there being grooves in said base, upper edge and lateral edges of said tile to fit around the tubes of a boiler.

8. An inclined baffle wall composed of a  
55 plurality of rows of interfitting tiles, each tile having its base of greater thickness than its upper edge, and its front and rear faces converging upwardly and forwardly, the rear faces of said tiles being flush with one  
60 another.

9. A baffle wall, for horizontal water tube  
65 boilers, arranged transversely of the tubes and composed of interfitting tiles each having grooves in its edges to fit around the tubes, said grooves being bell-shaped at the end in all of the tiles around the same tube, whereby the tubes may be guided into place  
70 in the wall from all sides.

10. A baffle wall, for horizontal water tube  
75 boilers, arranged transversely of the tubes and inclined forwardly for the purpose specified, said wall being composed of inter-fitting tiles each having its front and rear faces converging upwardly, each tile also having a bell-shaped groove to fit around a  
80 tube, said bell-shaped grooves extending entirely around the tube.

11. An inclined baffle wall, for horizontal  
85 water tube boilers, arranged transversely of the tubes, said wall being composed of inter-fitting tiles each having its front and rear faces inclined in a forward and upward direction but at different angles, the base of each tile being thicker than its upper edge.

12. An inclined baffle wall, for horizontal  
90 water tube boilers, arranged transversely of the tubes, said wall being composed of inter-fitting tiles each having its front and rear faces inclined in a forward and upward direction but at different angles, the base of each tile being thicker than its upper edge  
95 and the center of gravity of each tile falling within its base.

In testimony whereof I have signed my name to this specification.

FREDERICK C. STIMMEL,